

# CENTRAL VALLEY FLOOD MANAGEMENT PLANNING PROGRAM

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## Errata to the Public Draft

### 2012 Central Valley Flood Protection Plan

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**June 2012**

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# Errata to the Public Draft 2012 Central Valley Flood Protection Plan

## 1. Table of Contents List of Figures, page VII

Figure 3-1. State Systemwide Investment Approach – Sacramento River Basin Major Capital Improvements **under Consideration**

Figure 3-2. State Systemwide Investment Approach – San Joaquin River Basin Major Capital Improvements **under Consideration**

## 2. Table of Contents Attachments, page VIII

~~NOTE: A number of technical attachments to the 2012 Central Valley Flood Protection Plan are forthcoming. They will be available in early 2012 to support review and adoption of the Central Valley Flood Protection Plan by the Central Valley Flood Protection Board.~~

### **Volume II: Attachment 7**

Attachment 7: Plan Formulation Report

### **Volume III: Attachment 8 through 8E**

Attachment 8: Technical Analysis Summary Report

Attachment 8A: Hydrology

Attachment 8B: Reservoir Analysis

Attachment 8C: Riverine Channel Evaluations

Attachment 8D: Estuary Channel Evaluations

Attachment 8E: Levee Performance Curves

### **Volume IV: Attachment 8F through 8L**

Attachment 8F: Flood Damage Analysis

Attachment 8G: Life Risk Analysis

Attachment 8H: Regional Economic Analysis for the State Systemwide Investment Approach

Attachment 8I: Framework for Benefit Assessment

Attachment 8J: Cost Estimates

Attachment 8K: Climate Change Analysis

Attachment 8L: Groundwater Recharge Opportunities Analysis

### **Volume V – Part 1: Attachments 9A through 9C**

Attachment 9A: Regional Advance Mitigation Planning

Attachment 9B: Status and Trends of the Riparian and Riverine Ecosystems of the Systemwide Planning Area

Attachment 9C: Fish Passage Assessment

### **Volume V – Part 2: Attachments 9D through 9G**

## Errata to the Public Draft 2012 Central Valley Flood Protection Plan

Attachment 9D: Improving Vegetation Data

Attachment 9E: Existing Conservation Objectives from Other Plans

Attachment 9F: Floodplain Restoration Opportunity Analysis

Attachment 9G: Regional Permitting Options

### 3. Section 1.2, page 1-5, first sentence of last paragraph

During major flood events, there is close coordination between State, federal, and local agencies to forecast weather and runoff conditions, manage and coordinate releases from the reservoir system, patrol and floodfight along the levee and bypass system, and operate ~~the Sacramento Weir~~ weirs, drainage pumps, and other flood control structures.

### 4. Section 1.4, Table 1-1, Conditions, 4<sup>th</sup> bullet

Revise bullet to state:

- Design profiles (e.g., 1955 and 1957)

### 5. Section 1.4, page 1-12, last sentence of first paragraph

While the chance and frequency of flooding have decreased since construction of ~~the~~ SPFC facilities and other multipurpose reservoirs, the damages that would occur if a levee were to fail in one of the urban areas are much greater, resulting in a net long-term increase in cumulative damages if no action is taken to improve the flood management system and limit further development in these areas.

### 6. Section 1.4, page 1-15, photo caption

Typical ~~R~~Rock ~~R~~Revetment ~~a~~Along Sacramento River

### 7. Section 1.4, page 1-16, text box

“100-Year Flood” is a shorthand expression for a flood that has a 1 in 100 chance of being exceeded in any given year. This may also be expressed as the 1-% annual chance of exceedence flood, or “1-% annual chance flood” for short. Similarly, a 200-year flood has a 1 in 200 (or 0.5 %) chance of being exceeded in any given year.

### 8. Section 1.4, page 1-16, last paragraph

For example, the 100-year and 200-year (1-% and 0.5-% annual chance) flood events, calculated based on historical flood events, may become larger for many watersheds, with long-term effects on National Flood Insurance Program map ratings, flood insurance costs, floodplain development, and the economic viability of floodplain communities.

## Errata to the Public Draft 2012 Central Valley Flood Protection Plan

**9. Section 1.6, page 1-21, third sentence of last paragraph**

These include the *State Plan of Flood Control Descriptive Document*, the *Flood Control System Status Report*, and the CVFPP *Final Program Environmental Impact Report* (~~DWR, anticipated 2012~~).

**10. Section 1.6.1, page 1-26, text box title**

COMMUNICATION AND ENGAGEMENT ~~IN PLAN DEVELOPMENT~~

**11. Section 1.6.2, page 1-27, Improve Institutional Support Bullet**

Remove hard return to move the word “operations” up one line.

**12. Section 1.6.3, page 1-27, first sentence of first paragraph of the section**

Plan formulation ~~for~~ the 2012 CVFPP was a multi-step process.

**13. Section 1.6.3, page 1-28, last two sentences of second paragraph**

The models took into account levee heights and ~~fragility~~ **physical condition**, weir spills, levee failures, and other dynamic processes that can occur during major floods. The output from these hydrologic and hydraulic models was used in additional models to estimate **expected annual** flood damages in the protected floodplains.

**14. Section 1.6.5, page 1-30, first paragraph**

Remove the hyphen from the acronym CVFPP at the end of the paragraph.

**15. Section 1.6.5, page 1-30**

Add the following to the end of the section:

- **Attachment 7 - Plan Formulation Report** describes the plan formulation process for the 2012 CVFPP.
- **Attachment 8: Technical Analysis Summary Report** describes the technical analyses completed for the 2012 CVFPP.
- **Attachment 9: Supporting Documentation for Conservation Framework** describes the technical analysis approach, tools, and data supporting development of the Conservation Framework

## Errata to the Public Draft 2012 Central Valley Flood Protection Plan

### 16. Section 2.3.1, page 2-4, second sentence of second paragraph

This approach ~~does not~~ includes remediation of non-SPFC urban levees, ~~although as~~ it is recognized that some non-SPFC levees can affect flooding within the SPFC Planning Area.

### 17. Section 2.3.2, page 2-6, second sentence of first paragraph

This approach would provide an approximately ~~47~~ 43 percent reduction in annual flood damages compared to current conditions.

### 18. Section 2.4.1, page 2-7, last sentence of first paragraph

Also, this approach ~~does not~~ includes improvements to non-SPFC levees that protect some urban areas.

### 19. Section 2.4.1, page 2-7, first bullet

This would be accomplished via structural repairs, reconstruction, or improvements to about 160 miles of urban SPFC levees and about 120 miles of urban non-SPFC levees to protect a population of about 1 million.

### 20. Section 2.4.1, page 2-7, last sentence of second bullet

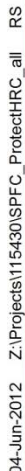
A total of 27 small communities were included in this approach. ~~Some of these small communities adjacent to existing urban areas may achieve a 100-year level of flood protection or higher as a result of improvements for the adjacent urban areas.~~

### 21. Section 2.4.1, page 2-8, Figure 2-2

Figure 2-2 “Urban Areas and Small Communities Included in Protect High Risk Communities Approach” is replaced by the following:



# Errata to the Public Draft 2012 Central Valley Flood Protection Plan



## Errata to the Public Draft 2012 Central Valley Flood Protection Plan

### 22. Section 2.5.1, page 2-10, last sentence of first paragraph

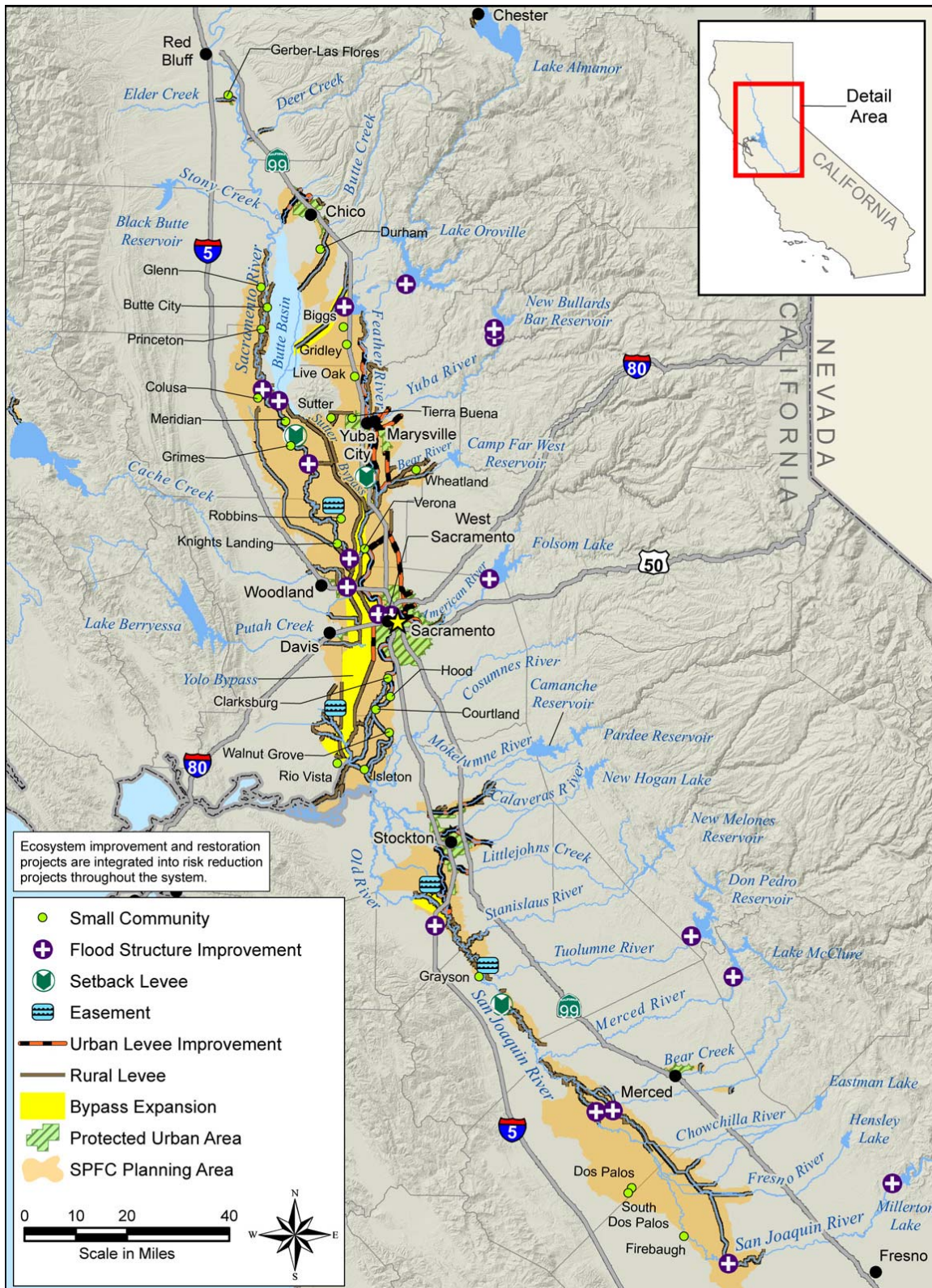
Also, this approach ~~does not~~ includes improvements to non-SPFC levees that protect some urban areas.

### 23. Section 2.5.1, Page 2-11

Figure 2-3 “Improvements Included in Enhance Flood System Capacity Approach” is replaced by the following:



# Errata to the Public Draft 2012 Central Valley Flood Protection Plan



## Errata to the Public Draft 2012 Central Valley Flood Protection Plan

### 24. Section 2.5.1, page 2-12, third major bullet

This approach includes floodway widening along smaller sections of ~~the~~ some rivers by setting back SPFC levees as follows:

### 25. Section 2.6.1, page 2-15, Table 2-1

- Tisdale Bypass and Colusa Bypass fish passage ~~Sutter east of Butte Basin~~
- Fremont Weir fish passage improvements
- ~~Yolo Bypass/Willow Slough Weir fish passage improvements~~
- Deer Creek

### 26. Section 2.6.1, page 2-15, Table 2-1, Note 3

3. Includes all small communities within the SPFC ~~Planning Area~~.

### 27. Section 2.6.1, page 2-16, last line of first paragraph

The scale of the risk management actions vary among the ap~~-~~proaches.

### 28. Section 2.6, page 2-19, Figure 2-4 note

~~Note:~~ Location of ~~P~~peak ~~F~~flow and ~~W~~water ~~S~~surface ~~E~~elevation ~~E~~estimates for 100-year ~~S~~storm ~~E~~event at selected monitoring locations in the Sacramento River Basin.

### 29. Section 2.6, page 2-20, Figure 2-5 note

~~Note:~~ Location of ~~P~~peak ~~F~~flow and ~~W~~water ~~S~~surface ~~E~~elevation ~~E~~estimates for 100-year ~~S~~storm ~~E~~event at selected monitoring locations in the San Joaquin River Basin.

### 30. Section 2.6.1, page 2-21, Table 2-4, last row, Achieve SPFC Design Flow Capacity

~~47~~ 43% reduction in EAD

### 31. Section 2.7, page 2-26, first sentence of last paragraph

The SSIA begins with the Protect High Risk Communities Approach, but encompasses aspects of each of the ~~initial~~ preliminary approaches, to balance achievement...

## Errata to the Public Draft 2012 Central Valley Flood Protection Plan

### 32. Section 2.7, page 2-28, the second bullet from the top

The following bullet is deleted due to duplication (previously shown on page 2-27):

- ~~• Would increase the population receiving at least a 100-year (1% annual chance) level of flood protection from about 25 percent to over 90 percent compared with existing conditions~~

### 33. Section 2.8, page 2-29, last sentence in the fourth bullet from the top

Where feasible, the State supports consideration of higher levels of flood protection, particularly for ~~existing~~ urban/ and ~~adjacent~~ urbanizing areas in deep floodplains (greater than 3 feet of flooding during a 200-year flood).

### 34. Section 2.8, page 2-29, second to last bullet

- New development in nonurbanized areas, including small communities, must meet the national FEMA standard of flood protection, per California Government Code Sections 65865.5, 65962, and 66474.5. ~~This corresponds to the minimum level of flood protection (100-year flood) required for participation in the National Flood Insurance Program. This corresponds to the minimum level of flood protection (100-year flood) required to remove or exclude an area or community from a Special Flood Hazard Area as defined by FEMA.~~

### 35. Section 3.1, page 3-2, Table 3-1, Note 2

Includes Urban Levee Evaluations Project ~~classifications~~ ~~categories~~ “Marginal” and “Does Not Meet Criteria” and Non-Urban Levee Evaluations Project categories B (~~Moderate~~) and C (~~Low~~).

### 36. Section 3.1 page 3-4, Table 3-2, Notes 3 and 4

<sup>3</sup> Includes all small communities within the SPFC ~~Planning Area~~.

<sup>4</sup> Includes selected small communities within the SPFC ~~Planning Area~~.

### 37. Section 3.2, page 3-4, Table 3-2

- Tisdale Bypass and Colusa Bypass fish passage ~~Sutter east of Butte Basin~~
- Fremont Weir fish passage improvements
- ~~• Yolo Bypass/Willow Slough Weir fish passage improvements~~
- ~~• Yuba River fish passage and fish screen~~
- Deer Creek

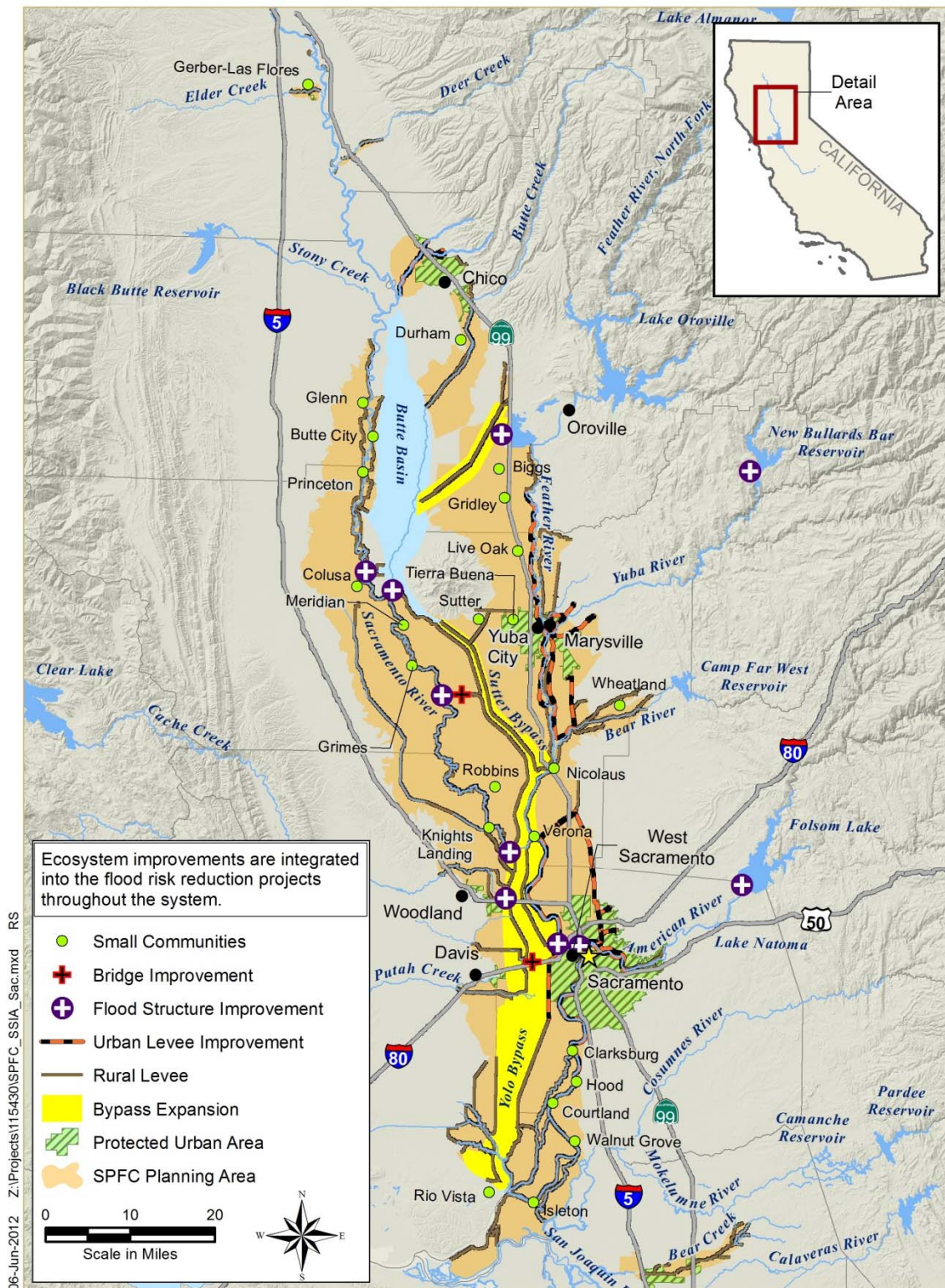
## Errata to the Public Draft 2012 Central Valley Flood Protection Plan

### **38. Section 3.2, pages 3-5 and 3-6, Figures 3-1 and 3-2**

Figure 3-1 and Figure 3-2 are replaced by the following:

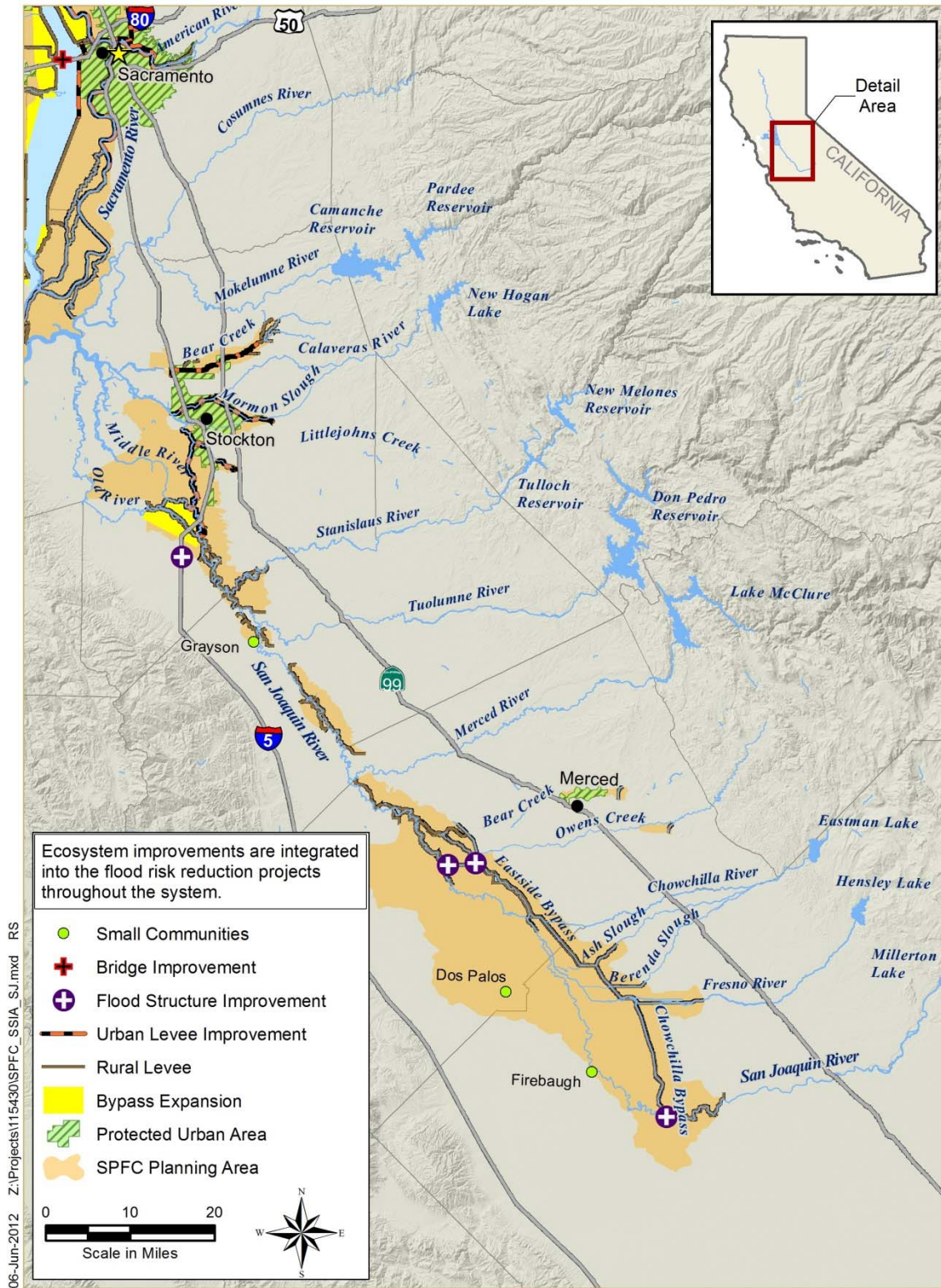


# Errata to the Public Draft 2012 Central Valley Flood Protection Plan





# Errata to the Public Draft 2012 Central Valley Flood Protection Plan



**Figure 3-2. State Systemwide Investment Approach – San Joaquin River Basin Major Capital Improvements under Consideration**



## Errata to the Public Draft 2012 Central Valley Flood Protection Plan

### 39. Section 3.2, page 3-7, first sentence of first paragraph

Improvements to urban levees or floodwalls should follow DWR's *Urban Levee Design Criteria*, (~~anticipated 2012~~), at a minimum.

### 40. Section 3.2, page 3-7, side bar

...(Building a Stronger Corps: A Snapshot of How the Corps is Applying Lessons Learned from Katrina (USACE, 2009)).

### 41. Section 3.2, page 3-8, first bullet

- **Yuba City and City of Marysville** – Improvements for this metropolitan area and adjacent ~~existing~~ urbanizing corridor (along Highway 99 north of Yuba City, and along Highway 70 within and south of Marysville) include:

### 42. Section 3.2, page 3-8, second sub-bullet of first bullet

- Continue to work with Sutter Butte Flood control Agency to develop and implement projects to achieve an urban level of flood protection for Yuba City and adjacent ~~existing~~ urbanizing areas.

### 43. Section 3.3, page 3-9, second sentence of first paragraph of the section

The State will evaluate investments to preserve small community development opportunities without providing an urban level of flood protection. ~~However, some small communities adjacent to existing urban areas may achieve a 100-year level of flood protection or higher as a result of improvements for the adjacent urban areas.~~

### 44. Section 3.3, page 3-10, first sentence of last paragraph of the section

~~Improvements to S~~small communities ~~improvements~~ should also be implemented and maintained consistent with the State's vegetation management approach (Attachment 2 – Conservation Framework).

### 45. Section 3.4.1, page 3-10, second sentence of first paragraph of the section

The State will work with rural-agricultural communities to develop applicable ~~rural levee~~ repair ~~standards~~ ~~criteria~~ for SPFC levees (see Section 4).

### 46. Section 3.5.2, page 3-14 and 3-15

New Bypasses: While they ~~would~~ primarily provide benefits to the urban areas of Yuba City/Marysville and Stockton, they are described here...

## Errata to the Public Draft 2012 Central Valley Flood Protection Plan

Lower San Joaquin Bypass: A south Delta bypass ~~will~~ would include habitat components. A gate structure or weir at Paradise Cut will be considered as part of the project. The new bypass would require construction of about eight miles of new levee. In combination with the bypass, the State will consider purchasing easements in the south Delta from willing sellers...

### 47. Section 3.5.1, page 3-14 , Yolo Bypass Expansion 3<sup>rd</sup> bullet

As described under ~~Section 3.2 Urban Flood Protection above~~, evaluate the Cache Creek Settling Basin to identify a long-term program for managing sediment and mercury to sustain the flood conveyance capacity of the Yolo Bypass.

### 48. Section 3.5.1, page 3-14 , 1<sup>st</sup> paragraph of Sacramento Bypass Expansion

As part of urban elements to reduce flood risks to the Sacramento/West Sacramento metropolitan area, future studies to refine specific project elements related to bypass expansion (also ~~described mentioned~~ under ~~Section 3.2 Urban Flood Improvements~~) will consider the following:

### 49. Section 3.5.6, page 3-17, third sentence of second paragraph

Proactive reservoir management through the use of ~~a~~ more flexible flood control diagrams would require extensive studies of the most feasible diagrams, environmental documentation for changing reservoir operations, and Congressional approval for ~~a~~ new dynamic flood control diagrams.

### 50. Section 3.6.1, page 3-19, last sentence of first paragraph

Remove hard return to move “State programs” up one line.

### 51. Section 3.7, page 3-21, last sentence of first paragraph

Remove hard return to move “flood” up one line.

### 52. Section 3.8, page 3-23, fourth sentence of second full paragraph

For the 2012 CVFPP, high tide conditions during the 1997 flood (~~a strong El Nino event~~) were used as the boundary conditions for hydraulic analysis and could be considered an initial, surrogate condition under climate change.

### 53. Section 3.9, page 3-24, first and fourth paragraphs

First paragraph: Land uses in the Delta outside the SPFC ~~Planning Area~~ are primarily rural and dominated by agriculture and open space...

## Errata to the Public Draft 2012 Central Valley Flood Protection Plan

Flood management responsibilities in Delta areas outside the SPFC **Planning Area** reside with a variety of local agencies...

Fourth paragraph: The State will continue to support Delta flood management improvements outside the SPFC **Planning Area** through existing programs and in coordination with ongoing multiagency Delta Planning efforts.

### 54. Section 3.9, page 3-24, last sentence of third paragraph

The SSIA includes management actions ~~(see Section 3.5.9)~~ (see Section 3.5.7), and a cost allowance, to lessen or mitigate the impacts compared with current conditions.

### 55. Section 3.10.1, page 3-27, second sentence of second paragraph

Move quotation marks at the end of the fifth line of the paragraph to the beginning of the sixth line, so the sixth line begins with “deferred maintenance”.

### 56. Section 3.12, page 3-30, first Floodplain Management bullet in text box

- ~~Building code revision prepared~~ Approved building code amendment for single family residential occupancy

### 57. Section 3.13.1, page 3-32, last part of first paragraph

Flood stages in the San Joaquin River Basin ~~do~~ **would** not change much with respect **to** current conditions because large bypass expansions were not included, except near the Delta.

### 58. Section 3.13.1, page 3-33, Figure 3-4

~~Location of Peak Flow and Water Surface Elevation Estimates for 100-Year Storm Event at selected monitoring locations in the Sacramento River Basin.~~

**Note:** Figure presents peak flow and water surface elevation estimates for various frequency flood events (represented as percent chance exceedence, e.g., 1%) at selected monitoring locations in the Sacramento River Basin.

### 59. Section 3.13.1, page 3-34, Figure 3-5

~~Location of Peak Flow and Water Surface Elevation Estimates for 100-Year Storm Event at selected monitoring locations in the San Joaquin River Basin.~~

**Note:** Figure presents peak flow and water surface elevation estimates for various frequency flood events (represented as percent chance exceedence, e.g., 1%) at selected monitoring locations in the ~~Sacramento~~ San Joaquin River Basin.

## Errata to the Public Draft 2012 Central Valley Flood Protection Plan

**60. Section 3.13.4, page 3-36, Table 3-7, fifth row and second column**

\$329 million in expected annual damages

**61. Section 3.13.4, page 3-36, Table 3-7, fifth row and third column**

Reduction of ~~67~~ 66 percent in expected annual damages

**62. Section 3.14.1, page 3-38, second paragraph**

Results of the modeling indicate an overall reduction in total expected annual damages of about ~~67~~ 66 percent, with specific reductions in damages and losses as follows:

- Structure and contents flood damages would be reduced by ~~72~~ 73 percent
- Crop damages due to flooding would be reduced by 6 percent
- Business production losses would be reduced by ~~72~~ 71 percent

**63. Section 3.14.4, page 3-41, first sentence of first paragraph**

~~Environmental~~ Ecosystem restoration is fully integrated with the flood risk reduction components of the SSIA.

**64. Section 3.14.4, page 3-41, second bullet, second sentence**

This includes connecting fishery habitat from ~~the~~ Delta to ~~the~~ Yolo and Sutter bypasses and to the Butte Basin.

**65. Section 3.15, page 3-43, third sentence of second bullet**

This would preserve small community development opportunities within specific boundaries without encouraging broader urban development. ~~However, some small communities adjacent to existing urban areas may achieve a 100-year level of flood protection or higher as a result of improvements for the adjacent urban areas.~~

**66. Section 3.15, page 3-43, text box, first bullet**

- 100 percent of ~~existing~~ urban areas protected by SPFC facilities attain 200-year level of flood protection

**67. Section 3.15, page 3-43, text box, second bullet first sentence**

About 20 of the small communities in the SPFC Planning Area (from a total of 27) will attain 100-year level of flood protection, ~~at a minimum.~~

## Errata to the Public Draft 2012 Central Valley Flood Protection Plan

### 68. Section 4.1, page 4-2, second sentence of first full paragraph

The last program is responsible for working with partnering agencies to implement on-the-ground projects that ~~are included in make-up~~ the SSIA.

### 69. Section 4.1.1, page 4-2, third paragraph

Similarly, coordinated flood operations among local maintaining agencies, cities and counties, the California Emergency Management Agency, the State-Federal Flood Operations Center, and USACE are critically important in managing and fighting floods, and saving lives and properties.

### 70. Section 4.1.1, page 4-2, fourth paragraph, last sentence

In addition, through the State-Federal Flood Operations Center, DWR will continue to provide ~~floodfight flood fight~~ assistance in the field...

### 71. Section 4.1.1, page 4-3, second paragraph, second sentence

An important consideration in flood emergency preparation is the availability of strategically-located resources for ~~floodfight flood fight~~ activities. Local maintaining agencies, as the first responders, have the responsibility for stockpiling ~~floodfight flood fight~~ materials for timely response to flood threats before other ~~floodfight flood fight~~ assistance becomes available.

### 72. Section 4.1.2, page 4-3, section heading

Remove hard return to move “Operations and Maintenance Program” up one line.

### 73. Section 4.1.4, page 4-7, last sentence of first paragraph

In support of the CVFPP, this program will prepare two basin-wide feasibility studies, in partnership with USACE, ~~as~~ as described in Section 4.4.4.

### 74. Section 4.1.4, page 4-10, first sentence of fourth paragraph on page

The State supports developing ~~a-rural~~ levee repair ~~standard criteria~~ for rural-agricultural areas, in coordination with local and regional flood management agencies.

### 75. Section 4.1.4, page 4-11, third bullet on page

- Developing rural-~~agricultural area~~ levee repair ~~standards criteria~~, in coordination with local and regional flood management agencies.

## Errata to the Public Draft 2012 Central Valley Flood Protection Plan

### 76. Section 4.1.5, page 4-12, text box, first sentence

The SSIA outlines improvements to SPFC facilities to achieve 200-year flood protection for ~~existing~~ urban and ~~adjacent~~ urbanizing areas.

### 77. Section 4.1.5, page 4-13, first sentence of first paragraph

constructing new ring levees around small communities and improvement of existing levees and floodwalls where feasible. ~~Some small communities adjacent to existing urban areas may achieve a 100-year level of flood protection or higher as a result of improvements for the adjacent urban areas.~~

### 78. Section 4.2, page 4-13, third sentence of third paragraph

Given that USACE Engineer Research and Development Center's research report (July, 2011) has shown that woody vegetation has the potential to increase or reduce risk, depending on a variety of factors, DWR believes it is appropriate to characterize woody vegetation as only a "potential risk factor" that should be considered in relation to the unequivocal risk factors ~~and to site-specific conditions.~~

### 79. Section 4.3.1, page 4-17

Add to the end of the section:

~~Facilities recommended to be removed from the SPFC are listed and discussed in Section 3.4.4.~~

### 80. Section 4.3.2, page 4-18, text box, section (c)

(C) Upon completion of the Central Valley Flood Protection Plan pursuant to this part, the department may identify ~~the~~ and propose to the board additional structural and non-structural facilities that may become facilities of the State Plan of Flood Control...

### 81. Section 4.4, page 4-19, Figure 4-2

Assess ~~problems~~ ~~deficiencies~~ in Flood Protection Zones

Prepare Regional ~~Financing~~ ~~Financial~~ Plan

### 82. Section 4.4.1, page 4-20, last sentence of fourth paragraph

The information gathered for the regional flood management plans will be used to help develop ~~of~~ the State basin-wide feasibility studies scheduled for completion by 2017.



## Errata to the Public Draft 2012 Central Valley Flood Protection Plan

### 83. Section 4.4.1, page 4-21, Figure 4-3 title

Figure 4-3. Central Valley Flood Protection Plan Implementation Regions ~~and~~ based on Flood Protection Zones

### 84. Section 4.4.2, page 4-22, third bullet

Move word “assessment” to be on one line, and remove split.

### 85. Section 4.4.5, page 4-26, second main bullet

At the feasibility study level for specific projects, reasonable opportunities will be carefully evaluated for integrating ~~of~~ multiple objectives into project design.

### 86. Section 4.5.1, page 4-28, last bullet of Flood System Operations and Maintenance

- Initiated and coordinated the ~~i~~nteragency Flood Management Collaborative Program

### 87. Section 4.5.1, page 4-28, first bullet of Floodplain Management

Move “Parts 2” for single-family residential occupancy” down one line.

### 88. Section 4.5.1, page 4-28, second bullet of Floodplain Management

- Sent flood risk notification letters to 300,000 ~~ea~~ffected property owners in the Central Valley in 2010 and 2011

### 89. Section 4.5.1, page 4-29, first bullet list

- Prepared the *State Plan of Flood Control Descriptive Document*, ~~2009~~2010

### 90. Section 4.5.1, page 4-29, second bullet list

- American River Common Features Project, to provide ~~200-year~~ an urban level of flood protection to ~~areas protected by levees along~~ the following ~~reaches~~ areas:
  - American River downstream from Folsom Dam
  - Sacramento River downstream from the American River
  - Natomas Basin

### 91. Section 4.5.1, page 4-31, first bullet of Flood Emergency Response Program

Remove hard returns to spread out the paragraph/fix margins.

## Errata to the Public Draft 2012 Central Valley Flood Protection Plan

**92. Section 4.5.1, page 4-31, first bullet of Flood System Operations and Maintenance Program/Rural Agricultural Areas**

- Work with rural-agricultural communities to develop rural levee repair ~~standards~~ criteria

**93. Section 4.5.2, page 4-33, first bullet**

- Continue to design and construct projects that are consistent with the SSIA, are ready to proceed, and are shown to be feasible, such as levee improvements for high-risk existing urban and adjacent urbanizing areas.

**94. Section 4.9, page 4-41, third sentence of first bullet**

An additional \$11 to \$\$14 billion will be needed during the next 20 years from federal, State, and local sources.

**95. Section 5.0, page 5-1**

~~CWC.....California Water Code~~

**96. Section 5.0, page 5-1**

~~O&M.....operations and maintenance~~

# CENTRAL VALLEY FLOOD MANAGEMENT PLANNING PROGRAM

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## Errata to the Public Draft

2012 Central Valley Flood Protection Plan

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## Volume I – Attachments 1 through 6

June 2012

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# Errata to the Public Draft 2012 Central Valley Flood Protection Plan Volume I – Attachments 1 through 6

## 1. Volume I – Universally

Update headers and footers throughout Volume I as follows:

~~January-June~~ 2012  
~~Public Draft-Final~~

## 2. Attachment 2 – Conservation Framework, Section 1.1.1, page 1-3

The CVFPP focused on ~~the~~ SPFC ~~Planning Area facilities~~; therefore, evaluations and analyses were conducted at a greater level of detail within the SPFC Planning Area than in the Systemwide Planning Area.

## 3. Attachment 2 – Conservation Framework, Section 2.2.1, page 2-4, Figure 2-2 title

Figure 2-2. Constrained Reach of Sacramento River ~~Upstream~~ Downstream from Colusa

## 4. Attachment 2 – Conservation Framework, Section 2.2.1, page 2-4, Figure 2-3 title

Figure 2-3. ~~River—Active Floodplain~~-Active Sacramento River Floodplain Upstream from Ord Ferry

## 5. Attachment 2 – Conservation Framework, Section 2.2.3, page 2-15, Table 2-3

Replace status for Delta Smelt as follows:

Delta smelt	<i>Hypomesus transpacificus</i>	FT/CE	•			
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## 6. Attachment 2 – Conservation Framework, Section 4.2.6, page 4-15, first paragraph, first sentence

Current O&M levee maintenance and repair activities include manual and mechanical ~~controlling~~ ~~controlling~~ vegetation (terrestrial and aquatic), mowing, dragging and grading, burning, livestock grazing, removing trees, applying rodenticide and herbicide, filling or grouting rodent burrows and other penetration gaps, and placing fill or rock slope.

## Errata to the Public Draft 2012 Central Valley Flood Protection Plan Volume I – Attachments 1 through 6

7. **Attachment 2 – Conservation Framework, Section 4.2.10, page 4-22, first paragraph, last sentence**

To date, USFWS and DWR have been unable to move forward with the Three Amigos project due to lack of established USACE ~~precedure~~ procedure for removal of the levees.

8. **Attachment 2 – Conservation Framework, Section 5.4.1, page 5-6, first paragraph, end of 4<sup>th</sup> sentence**

Given that USACE Engineer Research and Development Center's (ERDC) research report (July 2011) shows that woody vegetation has the potential to increase or reduce risk, depending on a variety of factors, DWR believes it is appropriate to characterize woody vegetation as only a "potential risk factor" that should be considered in relation to the unequivocal risk factors ~~and to site specific conditions~~.

9. **Attachment 2 – Conservation Framework, Section 5.4.2, page 5-7, first paragraph**

The lower waterside slope is defined as the portion of the waterside slope that is below the vegetation management zone (which is typically ~~the upper~~ 20 feet (slope length), but may be less on short levees).

10. **Attachment 2 – Conservation Framework, Section 5.4.2, page 5-7, third bullet, last sentence**

Exceptional roots of large cottonwoods may grow some distance into the levee, following beneath the ~~watereside-waterside~~ slope surface, or following soil lenses, but roots do not go from water to landside.

11. **Attachment 2 – Conservation Framework, Section 5.4.2, page 5-7, last paragraph, last bullet**

Correct font on the word "in" as follows:

Woody vegetation may have beneficial functions, such as holding soil ~~in~~ in place to avoid erosion, recruiting sediment, and aiding slope stability.

12. **Attachment 2 – Conservation Framework, Section 5.4.3, page 5-9, text box, second paragraph**

The vegetation management zone includes the entire landside levee slope (and berm) plus 15 feet...



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### 13. Attachment 2 – Conservation Framework, Section 5.4.3, page 5-9, text box, third paragraph

For levees that have a waterside slope **length** of less than 20 feet...

### 14. Attachment 2 – Conservation Framework, Section 5.4.3, page 5-9, text box, fourth paragraph.

For levees that have a short waterside slope **length** above the water surface elevation...

### 15. Attachment 2 – Conservation Framework, Section 5.4.3, page 5-9, text box, fifth paragraph.

Replace fifth paragraph as follows:

~~For levees with a landside berm, the vegetation management zone is determined by using the projected landside levee slope instead of the actual landside levee slope.~~

For levees with a landside berm at least 3 feet thicker than required for structural integrity, the portion of the berm that is more than 15 feet from both the landside levee slope and the landward edge of the top of the berm is not included in the vegetation management zone; this area may be planted and allowed to naturally revegetate.

### 16. Attachment 2 – Conservation Framework, Section 5.4.3, page 5-13

Add new section as follows before the Levees with Preexisting “Legacy Levee Vegetation” section:

#### **Vegetation Planting**

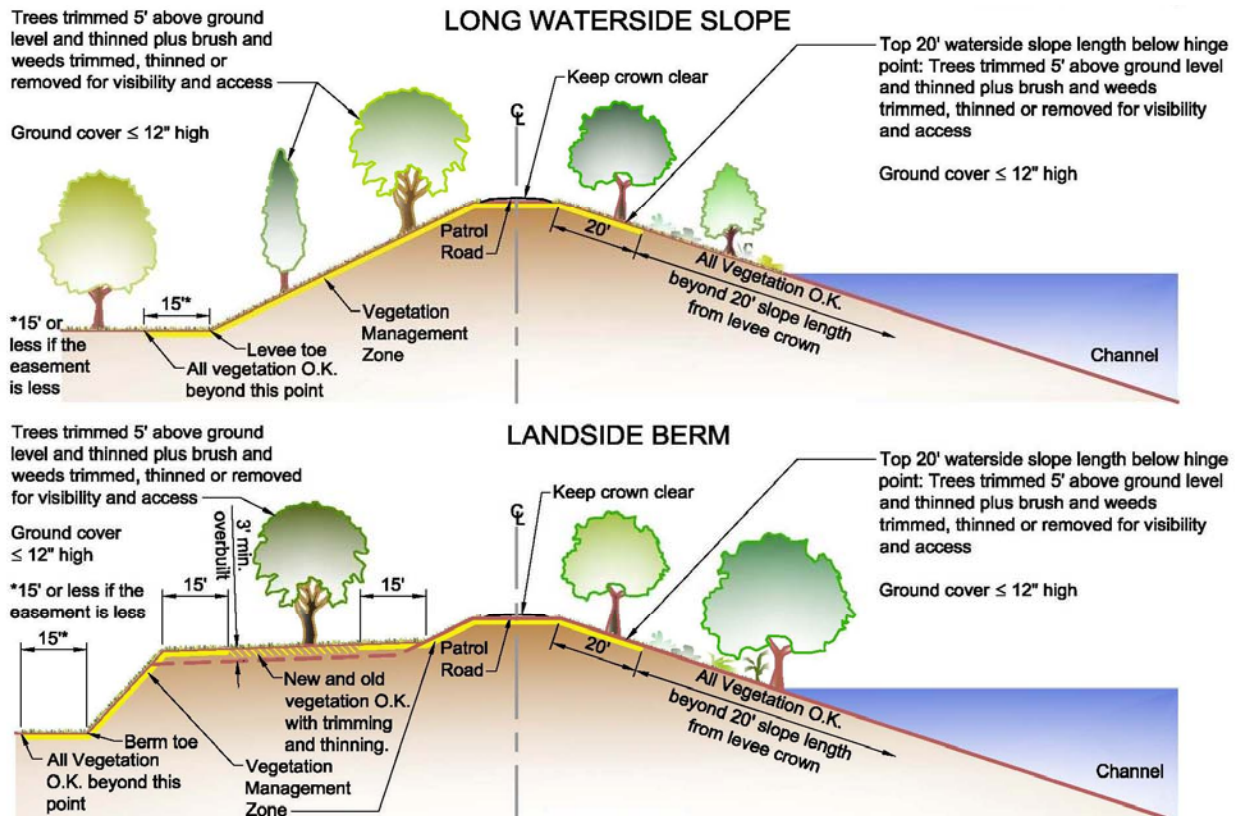
Trees and other woody vegetation may be: (1) planted, and (2) allowed to naturally revegetate on a landside planting berm. Only the portion of the landside planting berm that is both 15 feet or more from the landside levee slope and 15 feet or more from the landward top of the planting berm may be planted and allowed to naturally revegetate. All trees and other woody vegetation in this area of the planting berm must be trimmed up 5 feet above the ground and thinned for visibility. Any landside berm can be a planting berm if its top is more than 30 feet wide (as measured perpendicular to the levee centerline) and the berm is at least 3 feet thicker than required for levee integrity (to account for potential overturning of trees from windthrow) (see Figure 5-1).

Trees and other woody vegetation may be planted on a waterside planting berm below the vegetation management zone, and on natural ground more than 20 feet (slope distance) waterward of the waterside levee crown hinge point.

# Errata to the Public Draft 2012 Central Valley Flood Protection Plan Volume I – Attachments 1 through 6

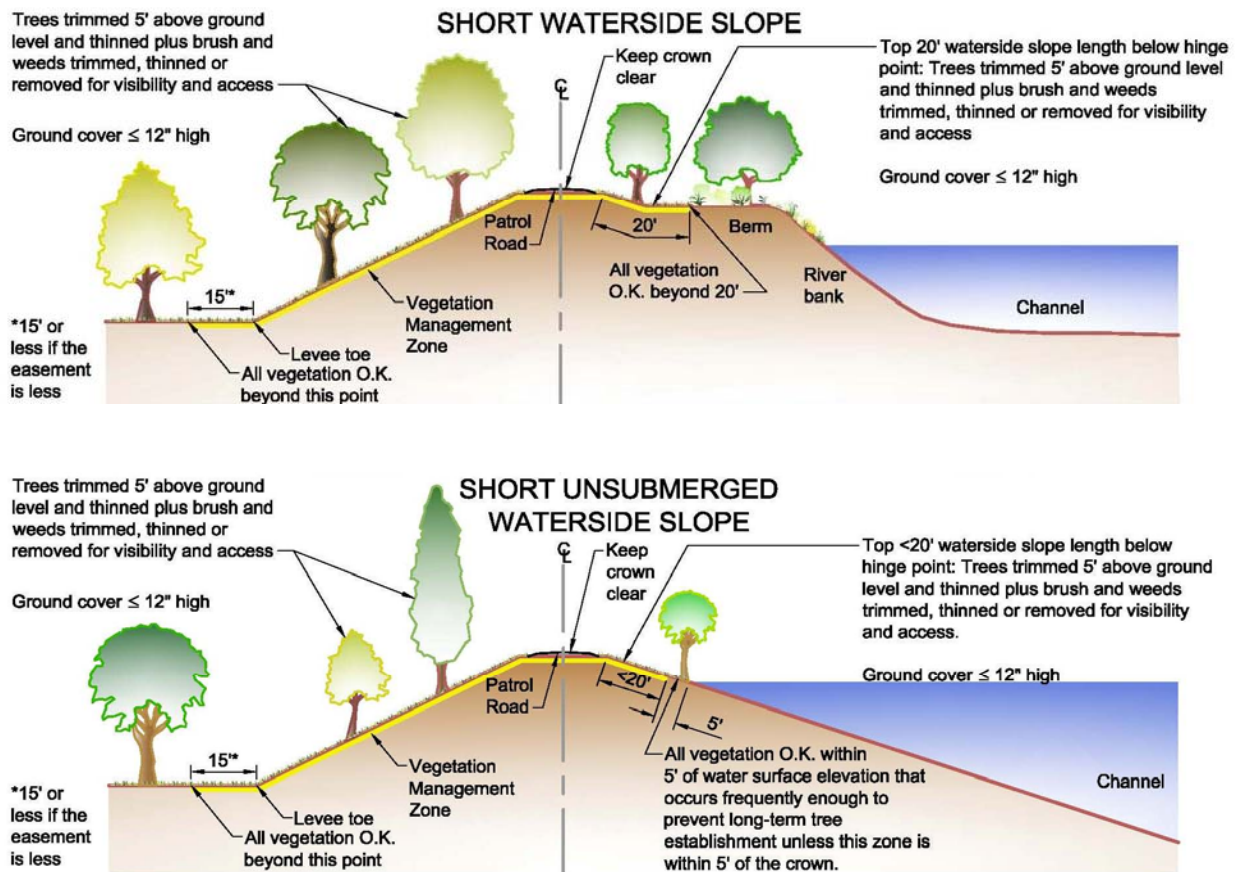
## 17. Attachment 2 – Conservation Framework, Section 5.4.3, page 5-13

Replace Figures 5-1 through 5-2 and the figure titles with the following:



**Figure 5-1. ~~DWR Vegetation Inspection Criteria for Standard Levees—Long Waterside Slope and Landside Berm~~ Vegetation Management for Existing Levees – Long Waterside Slope and Landside Berm**

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**Figure 5-2. DWR Vegetation Inspection Criteria for Standard Levees—Short Waterside Slope and Short Unsubmerged Waterside Slope Vegetation Management for Existing Levees – Short Waterside Slope and a Short Waterside Slope Above the Water Surface Elevation that Frequently Submerges the Lower Waterside Slope**

**18. Attachment 3 – Documents Incorporated by Reference, Section 1.0, page 1-1, first paragraph**

~~Criteria for Demonstrating~~ Urban Level of Flood Protection ~~Criteria~~ (DWR, 2012b), and Urban Levee Design Criteria (DWR, 2012a).

**19. Attachment 3 – Documents Incorporated by Reference, Section 1.1, page 1-4, fifth sub-bullet**

The ~~EE~~ Early Implementation Program

**20. Attachment 3 – Documents Incorporated by Reference, Section 1.3, page 1-9**

1.3 Summary: ~~Draft Criteria for Demonstrating~~ Urban Level of Flood Protection ~~Criteria~~

## Errata to the Public Draft 2012 Central Valley Flood Protection Plan Volume I – Attachments 1 through 6

### 21. Attachment 3 – Documents Incorporated by Reference, Section 1.3, page 1-9

The draft criteria ~~are-being~~ were developed through a collaborative process, with input from engineering and planning experts from cities and counties and other organizations.

### 22. Attachment 3 – Documents Incorporated by Reference, Universally

Update document name and reference throughout the attachment as follows:

*~~Draft Criteria for Demonstrating~~ Urban Level of Flood Protection ~~Criteria~~* (DWR, 2012b)

### 23. Attachment 3 – Documents Incorporated by Reference, Figure 1-1, page 1-11

Replace Figure 1-1 with the following:



# Errata to the Public Draft 2012 Central Valley Flood Protection Plan Volume I – Attachments 1 through 6

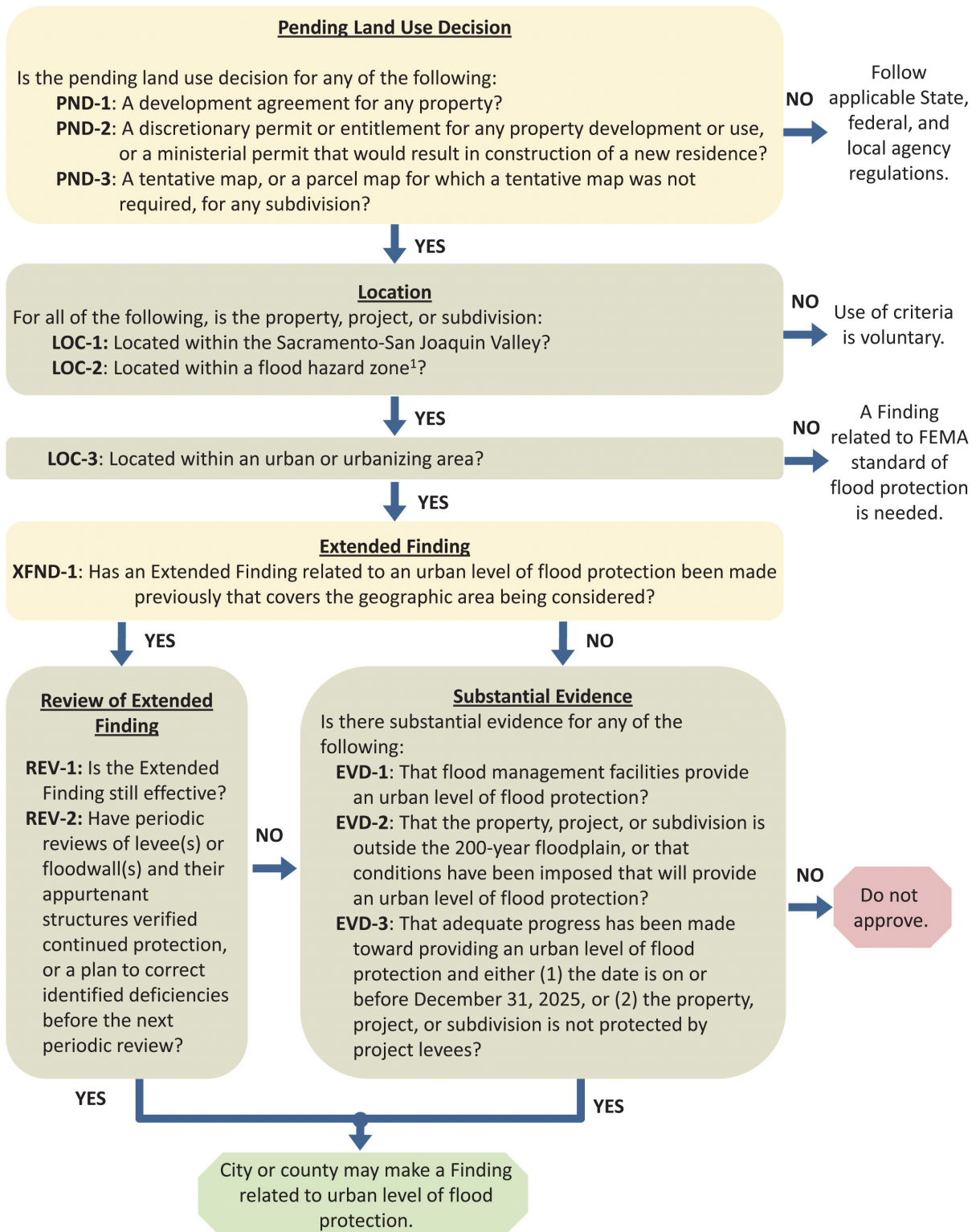


Figure 1-1. Flowchart for **Cities and Counties to Making Findings Related to an Urban Level of Flood Protection**

## Errata to the Public Draft 2012 Central Valley Flood Protection Plan Volume I – Attachments 1 through 6

### 24. Attachment 3 – Documents Incorporated by Reference, Section 1.4, page 1-12

The Urban Levee Design Criteria (ULDC) (DWR, 2012a) ~~is intended to~~ provides engineering criteria and guidance for the design, evaluation, and O&M of levees and floodwalls that provide an urban level of flood protection in California, ~~as well as for determining design water surface elevation (DWSE) along leveed and unleveed streams.~~ Other topics beyond design and evaluation ~~(e.g., O&M, inspection, monitoring, and remediation of poor performance)~~ are presented ~~in the ULDC~~ to provide reasonable assurance that once a levee or floodwall is found to provide an urban level of flood protection, it will continue to do so.

The ULDC was developed through a collaborative ~~stakeholder involvement~~ process with representatives from cities, counties, flood agencies, and State and federal agencies ~~stakeholders and subject matter experts.~~ The purpose of the ULDC is to provide engineering criteria and guidance ~~interim analytical and procedural criteria~~ to civil engineers, ~~cities, and counties in the Sacramento-San Joaquin Valley to help them to follow in~~ meeting the requirements of California Government Code Sections 65865.5, 65962, and 66474.5, ~~with respect to which require those entities to make a finding that levees and floodwalls provide protection against a flood that has a 1-in-200 chance of occurring in any given year.~~ The ULDC also provides engineering criteria and guidance for DWR's urban levee evaluations and participation in urban levee projects. ~~In addition, the ULDC is designed to provide guidance to engineers, cities, and counties throughout California.~~ The ULDC may be updated from time to time, either in its current form or ~~will serve as guidance until~~ as regulations are adopted in the California Code of Regulations (CCR) ~~on this topic.~~ The ULDC is summarized below.

### 25. Attachment 3 – Documents Incorporated by Reference, Section 1.4.1, page 1-12

The ULDC provides design criteria for two types of levees: intermittently loaded and frequently loaded. A frequently loaded levee is defined as a levee that experiences a water surface elevation of 1 foot or higher above the elevation of the landside levee toe at least once a day for more than 36 days per year, on average.

Design criteria are summarized in Tables 1-2 and 1-3 for each type of levee. In Table 1-2, Options 1 and 2 represent two options for calculating the design water surface elevation ~~(DWSE):~~ the Federal Emergency Management Agency (FEMA) ~~a~~ Approach, and the U.S. Army Corps of Engineers (USACE) ~~Corps~~ ~~a~~ Approach. Criteria in Table 1-3 are additions or exceptions to the criteria in Table 1-~~23~~ to include more stringent requirements for design of frequently loaded levees.

### 26. Attachment 3 – Documents Incorporated by Reference, Section 1.4.1, page 1-13 and 1-14

Replace Tables 1-2 and 1-3 with the versions on the following pages:



# Errata to the Public Draft

## 2012 Central Valley Flood Protection Plan

### Volume I – Attachments 1 through 6

**Table 1-2. Urban Levee Design Criteria Summary for Intermittently Loaded Levees**

Parameter	Criteria			
DWSE (Option 1)	Median 200-year WSE			
DWSE (Option 2)	90% assurance 200-year WSE			
MTOL (Option 1)	Median 200-year WSE + higher of (1) 3 feet, or (2) height for wind setup and wave runup			
MTOL (Option 2)	Lower of A or B, where: • A is the higher of (1) 90% assurance 200-year WSE, (2) median 200-year WSE plus 3 feet, or (3) median 200-year WSE plus height for wind setup and wave runup • B is the higher of (1) 95% assurance 200-year WSE, (2) median 200-year WSE plus 2 feet, or (3) median 200-year WSE plus height for wind setup and wave runup			
HTOL (Option 1)	Lower of (1) median 200-year WSE plus 3 feet, or (2) median 500-year WSE			
HTOL (Option 2)	Higher of A or B, where: • A is the lower of (1) median 200-year WSE plus 3 feet, (2) median 500-year WSE, or (3) MTOL (Option 2) • B is the DWSE			
Seepage - Exit Gradient at Levee Toe	For DWSE		For HTOL	
	$\gamma \geq 112 \text{ pcf}$	$\gamma < 112 \text{ pcf}$	$\gamma \geq 112 \text{ pcf}$	$\gamma < 112 \text{ pcf}$
	$i \leq 0.5$	$FS \geq 1.6$	$i \leq 0.6$	$FS \geq 1.3$
Seepage - Exit Gradient at Seepage Berm Toe	$i \leq 0.8$	$FS \geq 1.0$	<20% FS degradation for berms less than 100 feet	<10% FS degradation for berms less than 100 feet
Steady-State Slope Stability (Landside)	$FS \geq 1.4$		$FS \geq 1.2$	
Rapid Drawdown Slope Stability (Waterside)	$FS \geq 1.2$ (prolonged high stage) $FS \geq 1.0$ (short lasting high stage)			
Seismic Vulnerability	Restore grade and dimensions for at least 10-year WSE plus 3 feet of freeboard or higher for wind setup and wave runup within 8 weeks			
Levee Geometry	For new or extensive reconstruction on a major stream, minimum 20-foot-wide crown, 3h:1v waterside and landside slopes for all levees except bypass levees (4h:1v waterside slope)			

**Notes:**

- This table only includes criteria that are easily quantified.
- The median 200-year WSE, the 90 percent assurance 200-year WSE, and the 95 percent assurance 200-year WSE in this table are assumed to have been increased appropriately.
- Whichever option is selected, that same option is to be used for the DWSE, MTOL, and HTOL.

**Key:**

Option 1 = FEMA Approach

Option 2 = USACE Approach

DWSE = design water surface elevation

FS = factor of safety

HTOL = hydraulic top of levee

i = exit gradient

pcf = pounds per cubic foot

MTOL = minimum top of levee

WSE = water surface elevation

$\gamma$  = saturated unit weight of soil (blanket layer)

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**Table 1-3. Urban Levee Design Criteria Summary for Frequently Loaded Levees**

Parameter	Criteria	
	For DWSE	For HTOL
Steady-State Slope Stability (Landside)	FS $\geq$ 1.5	FS $\geq$ 1.3
Minimum Allowable Rapid Drawdown Slope Stability (Waterside)	FS $\geq$ 1.2*	
Frequent, Large, Tidal Fluctuations Rapid Drawdown Slope Stability (Waterside)	FS $\geq$ 1.4**	
Seismic Vulnerability	No significant deformation, usually limited to 3 feet maximum with 1 foot of vertical settlement.	

**Notes:**

These criteria are additions or exceptions to the criteria presented for intermittently loaded levees.

\*Applies for the DWSE.

\*\*Additional criterion that applies for the range of tidal fluctuation, not the DWSE.

**Key:**

DWSE = design water surface elevation

FS = factor of safety

HTOL = hydraulic top of levee

## 27. Attachment 3 – Documents Incorporated by Reference, Section 1.4.2, page 1-14 and 1-15

- The levee system must have an **O&M operation and maintenance** manual consistent with USACE requirements (except as may be appropriate to ~~add to deviate from~~ those requirements to ~~meet the purpose of~~ comply with the ULDC). In developing or updating the operation and maintenance manual, the civil engineer and/or the levee maintaining agency should consider guidance contained in DWR's Superintendent's Guide to Operation & Maintenance of California's Flood Control Projects (undated).
- All facilities necessary for providing ~~an~~the urban level of flood protection must be operated and maintained by an identified public agency with the authority and resources to do so. Where the levee system has more than one agency with **O&M operation and maintenance** responsibilities, they will need to coordinate the responsibilities.
- ~~Corps~~ USACE standard inspection requirements for project levees are applicable for all levees and floodwalls considered to provide ~~an~~ the urban level of flood protection, including that a public agency (or agencies) routinely operates and maintains the levee system and inspects the entire levee system at least every 90 days and after every high water event. ~~Damage and maintenance inadequacies identified from these inspections should be prioritized and repaired in a timely manner.~~
- ~~Damage and maintenance inadequacies identified from inspections should be prioritized and addressed in a timely manner, not awaiting the periodic review process.~~
- ~~With regard to waiting for the periodic review process to take action,~~ it is almost never practical or possible to completely know all of the engineering properties of levees and their foundations. Consequently, there will almost always be some degree of uncertainty

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that justifies both robust regular inspections and ~~flood-stage~~ high water monitoring programs for levees and floodwalls protecting urban and urbanizing areas, with all of the attendant appurtenances and features (such as all-weather access roads on levee crowns and near the toe of wide landside berms).

- Monitoring during high water needs to provide for a thorough visual inspection of both the waterside and landside levee slope (and landside berm toe area) at intervals of no more than 1 hour.
- ~~The levee system must have an emergency safety plan.~~
- The levee system must have a levee security plan that meets the requirements described in Section 7.18.
- The levee system must have a flood safety plan that meets the requirements described in Section 7.20.

Other requirements, such as for a post-earthquake remediation plan, right-of-way plan, encroachment remediation plan, penetration remediation plan, or ~~a levee relief cut plan, flood relief plan~~ – may also apply, depending on the situation.

## 28. Attachment 3 – Documents Incorporated by Reference, Section 1.4.3, page 1-15

Delete section and remove from the Table of Contents as follows:

### ~~1.4.3 Procedural Criteria Summary~~

~~The ULDC will rely upon procedures contained in the Urban Level of Flood Protection Criteria for making and maintaining a finding that a levee or floodwall provides an urban level of flood protection.~~

## 29. Attachment 4 – Glossary, page 2

Add the following term to the glossary:

annual exceedence probability	A measure of the likelihood of exceeding a specified target in any year. For example, the annual exceedence probability of a 10-m levee might be 0.01. That implies that the annual maximum stage in any year has a 1-percent chance (0.01 probability) of exceeding the elevation of the top of the levee.
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*U.S. Army Corps of Engineers  
Risk-based Analysis for Flood Damage Reduction Studies  
Manual No. 110-2-1619*

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## 30. Attachment 4 – Glossary, page 5

Add the following term to the glossary:

**environmental justice**      The fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies.

*California Government Code Section 65040.12 (c)*

## 31. Attachment 5 – Engagement Record, page 4-15

Remove section.

~~A CVFPP Phase 3/4 Assessment and Stakeholder Assessment Executive Summary is planned for development during the Board's adoption process of the CVFPP. This report will be updated once the assessment and summary is completed.~~

## 32. Attachment 5 – Engagement Record, page 4-15

The Board, with support by DWR, ~~plans to~~ conducted a series of public meetings and public hearings for adoption of the 2012 CVFPP and the Programmatic Environmental Impact Report (PEIR). ~~This report will be updated during the Board adoption process.~~

## 33. Attachment 6 – Contributing Authors and Work Group Members List, pages 44-45

Replace work group list with version below:

Balakrishnan, Ariya	California Department of Water Resources
Banning, Brian	California Emergency Management Agency
Bartlett, Joseph	California Department of Water Resources
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Edell, Stuart	Butte County Public Works
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## Errata to the Public Draft 2012 Central Valley Flood Protection Plan Volume I – Attachments 1 through 6

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Twitchell, Jeff	Levee District 1 of Sutter County
Zhong, Ke	California Department of Water Resources

### 34. Attachment 6 – Contributing Authors and Work Group Members List, pages 52-53

Replace work group list with version below:

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### 35. Attachment 6 – Contributing Authors and Work Group Members List, pages 54-57

Replace work group list with version below:

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Childress-Byers, Jami	California Emergency Management Agency
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Wilson, Lisa	County of Sutter
Yagade, Gary	Atkins

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